

The cytotoxicity of Scytosiphon lomentaria against HL-60 promyelocytic leukemia cells

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Document type: Article **Language:** English**Abstract:**

This study examined the cytotoxicity of *Scytosiphon lomentaria*, using various **cancer** cell lines. The ethyl acetate (EtOAc) fraction of this **alga** showed the cytotoxicity to leukemia cells, including HL-60. When HL-60 cells were treated with its EtOAc fraction, several apoptotic characteristics, such as DNA fragmentation, chromatin condensation, and an increase of the population of sub-G1 hypodiploid cells, were observed. Moreover, the EtOAc fraction decreased c-Myc expression in a dose-dependent manner. In order to understand the mechanism of apoptosis induction by *S. lomentaria*, we examined the changes of Bcl-2 and Bax protein expression levels. The EtOAc fraction reduced Bcl-2, an antiapoptotic protein, but increased Bax, a proapoptotic protein, in a dose-dependent manner. When we examined the activation of caspase-3, an effector of apoptosis, the expression of the active form (19 kDa) of caspase-3 increased, and the increase of their activities was demonstrated by the cleavage of poly (ADP-ribose) polymerase, a substrate of caspase-3, to 85 kDa. The results suggest that the inhibitory effect of *S. lomentaria* on the growth of HL-60 appears to arise from the induction of apoptosis by way of the down-regulation of Bcl-2 and the activation of caspase.